

***Abstract of the Disclosure***

A method of manufacturing a capacitor in semiconductor devices, the method comprising forming a silicon oxide film on a surface of a silicon substrate; forming a nitride film on said silicon oxide film; forming a contact hole; depositing a doped polysilicon layer; performing an etch-back process to remove a portion of said doped polysilicon layer; forming an ohmic contact layer over said doped polysilicon layer in said contact hole; forming an anti-diffusion film on said ohmic contact layer; forming a silicate glass film; forming a concave hole by etching a portion of said silicate glass film; forming a Ruthenium lower electrode on said internal wall of said concave hole; forming a BST dielectric film on said first Ruthenium electrode; crystallizing said BST dielectric film; forming an upper electrode on said BST dielectric film, thereby forming a capacitor; and performing a thermal treatment to stabilize said capacitor.